CP2000-X
PROJECTION HEAD

# Parts & Module Replacement

***This document includes:***


1 Ordering Parts ..... page 1
2 Index of Replaceable Parts & Modules ..... page 2
3 Module Replacement Procedures ..... page 5
4 *CP2000-X* Interconnect Diagram ..... page 30


## 1 Ordering Parts

When ordering replacement parts, please provide the following information:

- ◊ Christie Part Number for each item required (see *Index of Parts & Modules*)
- ◊ Projector Model *(see projector rear panel)*
- ◊ Projector Serial Number *(see projector rear panel)*
- ◊ Date of Manufacture *(see projector rear panel)*

Order parts from one of the following locations:

**Christie Digital Systems, Inc.**

809 Wellington St. North
Kitchener, Ontario
Canada N2G 4Y7
Tel. 519-744-8005
Toll Free 1-800-265-2171 (sales/parts)

Tool Free 1-800-221-8025
(tech support only—*no parts ordering here*)
Fax 519-749-3302 (Service)
Fax 519-749-3136 (sales/parts)

**Christie Digital Systems, Inc.**

10550 Camden Drive
Cypress, CA 90630
Tel. 714-236-8610
Toll Free 1-886-880-4462 (sales/parts)
Tool Free 1-800-221-8025 (tech support only—*no parts ordering here*)

Fax 714-503-3375 (sales/parts)

**Christie Digital Systems Inc.**

View Point
200 Ashville way
Wokingham, Berkshire, RG41 2PL
United Kingdom
Tel. +44-118-926-6300
Fax +44-118-926-6322

**Christie Digital Systems Inc.**

627 Aljunied Road
# 05-02 Biz Tech Cneter
Singapore 389842
Tel. 65-6877-8737
Fax 65-6877-8747

***Availability*** ➤ Parts identified throughout may not be available separately. In addition, some parts stocked as inventory are available only until the current supply lasts. All part numbers are subject-to-change.

## 2 Index of Replaceable Parts & Modules

*CP2000-X* projection head replaceable parts and modules are listed in Table 1. Please refer to this table for each component/module name, part number, and the page number on which its replacement procedure begins.

Note that *CP2000-X* ballast components are documented in the *Roadie 25K Ballast Service Instructions*, as these ballasts are identical. Other *CP2000-X* options and accessories are listed in Table 2.

***Locating Parts in the Projector*** ➤ To locate or identify a *CP2000-X* module, refer to the *CP2000* and *Roadie 25K* exploded views—most *CP2000-X* modules are used in one or both of these models, thus a separate *CP2000-X* "exploded" assembly view has not been published. Components residing in the *CP2000-X* belly pan are the exceptions—they are not present in the other models of projection heads. Please see Figure 10.

### *Table 1. CP2000-X Index of Replaceable Parts & Modules*

| *Exploded View Label#* | *Module* | *Part Number* | *RoHS Part Number* | *See page…* |
|---|---|---|---|---|
| 2 *(Roadie 25K)* | AC Distribution Module | 03-260736-02P | 03-260736-52P | 8 |
| 3 *(Roadie 25K)* | AC Relay Module | 03-260656-01P | 003-110228-01 | 8 |
| 4 *(Roadie 25K)* | AC Voltmeter | 03-000489-01P | 003-120073-01 | 8 |
| n/a | Air Filter *(6-pack)* | 03-001981-01P | 03-001981-51P | n/a |
| n/a | Cathode Swivel Connector | 03-900510-01P | 03-900510-51P | n/a |
| 7 *(Roadie 25K)* | Cold Mirror | 03-005027-02P | 03-005027-52P | 8 |
| n/a | Covers | various | | 8 |
| 8 *(Roadie 25K)* | Douser Module (Shutter) | 03-240108-01P | 03-240108-51P | 8 |
| n/a | Enhanced Formatter Interface Board (EFIB) | 03-260729-02P | 03-260729-52P | 8 |
| n/a | Ethernet Hub *(not a Christie service part)* | n/a | n/a | 9 |
| 11 *(Roadie 25K)* | Fan — Card Cage | 03-000172-04P | 003-110264-01 | 10 |
| 13 *(Roadie 25K)* | Fan — Heat Exchanger | 003-000316 | 003-000316-02 | 10 |
| 14 *(Roadie 25K)* | Fan — Lamp Blower, 230V | 03-000158-01P | 03-000158-02P | 10 |
| 15 *(Roadie 25K)* | Fan — Side Intake *(2 required)* | 03-000147-05P | 003-110248-01 | 12 |
| n/a | Flex Cables 50-pin *(set of 6)* | 03-001947-01P | 003-000850-01 | 12 |
| 16 *(Roadie 25K)* | Fold Mirror | 03-005028-01P | 03-005028-51P | 13 |
| n/a | Fused Harnesses in Ballast | 03-900595-01P | 003-110128-02 | n/a |
| 18 *(Roadie 25K)* | Igniter | 03-000839-01P | 003-120085-01 | 13 |
| 19 *(Roadie 25K)* | Illumination Optics System (IOS) | 03-240102-03P | 003-000741-02 | 13 |
| 20 *(Roadie 25K)* | Integrator Module | 03-240100-01P | 03-240100-51P | 13 |
| 16 *(CP2000)* | Interface Board *(Secure-ready)* | 003-120031-02 | 003-120031-03 | 13 |
| 17 *(Roadie 25K)* | Interlock — Lamp Door *(also incl. vane switches)* | 003-000150 | 003-000150-02 | 14 |
| 18 *(Roadie 25K)* | LAD Fan *(does not include filter)* | 03-900504-01P | 03-900504-51P | 15 |
| 19 *(Roadie 25K)* | LAD Filter *(does not include fan)* | 03-001982-01P | 03-001982-51P | 15 |
| n/a | Lamp Ballast, 7 kW Universal Switching *(complete with housing)* | 38-814001-01 | 38-814001-51 | 16 |
| 25 *(Roadie 25K)* | LampLOC Module | 03-900517-01P | 03-900517-51P | 16 |
| 26 *(Roadie 25K)* | Lens Mount Kit | 03-900515-01P | 03-900515-51P | 18 |
| 27 *(Roadie 25K)* | Light Engine *(original style, available as a refurb only)* | 03-240106R02P | 004-000274 | 18 |
| 27 *(Roadie 25K)* | Light Engine *(FTP with 16MB memory on modular formatters)* | 003-000274 | 003-000274-02 | 18 |
| 29 *(Roadie 25K)* | Light Sensor Module | 03-240103-01P | 003-000740-01 | 18 |
| 31 *(Roadie 25K)* | Liquid Cooling System *(complete: pump, heat exchanger, reservoir)* | 03-900514-01P | 03-900514-51P | 20 |
| 30 *(Roadie 25K)* | Liquid Cooling Reservoir *(bottle, 2 hoses, 4 clamps)* | 03-001983-02P | 003-100434-01 | n/a |
| 17 *(Roadie 25K)* | Liquid Cooling Heat Exchanger *(exchanger, 2 hoses, 4 clamps)* | 03-000879-01P | 03-000879-51P | n/a |
| 33 *(Roadie 25K)* | Liquid Cooling Pump *(pump, 2 hoses, 4 clamps)* | 03-000876-01P | 003-120109-02 | 25 |
| 32 *(Roadie 25K)* | Low Voltage Power Supply (LVPS) | 03-000674-01P | 003-120076-01 | 23 |
| 28 *(CP2000)* | Motherboard with Twin DVI | 03-260694-03P | 003-110241-01 | 24 |
| 29 *(CP2000)* | Processor Board, Series 1 | 03-000755-01P | 003-000847-01<br>004-000847-01 | 24 |
| 35 *(Roadie 25K)* | Reflectors, 12" Glass *(incl. both front & rear)* | 03-240115-01P | 03-240115-51P | 26 |
| 36 *(Roadie 25K)* | Reflector Shield (Rear) | 03-006917-02P | 03-006917-52P | 26 |
| 37 *(Roadie 25K)* | Stepper Driver Board (SDB) | 03-260693-03P | 003-110242-01 | 26 |
| 33 *(CP2000)* | System Supervisor Module (SSM) | 03-260674-02P | 003-110243-01 | 26 |
| n/a | Temperature Sensors *(set of 2 for R/B DMDs, or prism or integrator)* | 003-000313 | 003-000313-02 | 27 |
| n/a | Touch Panel Controller (incl. 24V Power Supply) | 03-900506-01P | 03-900506-51P | 27 |
| 38 *(Roadie 25K* | UV Filter | 03-008003-01P | 03-008003-51P | 27 |
| 22 *(Roadie 25K* | Vane Switch — Exhaust Duct *(also incl. other 2 interlocks)* | 03-900511-01P | 03-900511-51P | 27 |
| 22 *(Roadie 25K* | Vane Switch — Lamp Fan *(also incl. other 2 interlocks* | 03-900511-01P | 03-900511-51P | 28 |
| 39 *(Roadie 25K* | Yellow Notch Filter | 03-008004-02P | 03-008004-52P | 29 |

### *Table 2. Other Parts / Options*

| *Part Name / Description* | *Part Number* | *RoHS Part Number* |
|---|---|---|
| ***LENSES*** | | |
| Lamp: 2KW Xenon CDXL | 03-000695-01P | 003-000598-02 |
| Lamp: 3KW Xenon CDXL | 03-000696-01P | 003-000599-02 |
| Lamp: 4.5KW Xenon CDXL | 03-000697-01P | 003-000600-02 |
| Lamp: 6KW Xenon CDXL | 03-000698-01P | 003-000601-02 |
| Lens, 1.25-1.45:1 | 38-809079-01 | 38-809079-51 |
| Lens, 1.45-1.8:1 | 38-809061-01 | 38-809061-51 |
| Lens, 1.8-2.4:1 | 38-809052-01 | 38-809052-51 |
| Lens, 2.2-3.0:1 | 38-809053-01 | 38-809053-51 |
| Lens, 3.0-4.3:1 | 38-809069-01 | 38-809069-51 |
| Lens, 4.3-6.0:1 | 38-809081-01 | 38-809081-51 |
| Lens, 5.5-8.5:11 | 38-809080-01 | 38-809054-51 |
| Lens, 1.25x Anamorphic—*requires anamorphic adapter* | 38-809054-01 | 38-813019-51 |
| ***OTHER*** | | |
| Anamorphic Adapter (manual)—*required for anamorphic lens. Non-motorized.* | 38-813019-02 | 38-813019-52 |
| TPC 50 ft. Cable—*connects TPC to Ethernet and TPC power supply* | 34-001999-03P | 34-001999-03P |
| Spare Lens Stabilizer Kit *(one included with projector)* | 003-000275 | 003-000275-02 |
| Blower Stabilizer Upgrade *(already included in units manufactured after Aug. 30, 2005)* | 003-000168 | 003-000168-02 |
| Pump Stabilizer Upgrade Kit *(included with CP2000-X model)* | 003-000326 | 003-000326-02 |
| Convergence Tool Kit | 003-000078 | 003-000078-02 |
| Protective Clothing Safety Kit | 598900-095 | n\a |

## 3 Module Replacement Procedures

This section provides instructions for replacing *CP2000-X* modules and service assemblies, many of which are similar to those in the *CP2000* and/or *Roadie 25K* and accessed with a few minor differences.

**⚠ WARNINGS ⚠**

HIGH VOLTAGES MAY BE EXPOSED

**WARNING**

ALWAYS UNPLUG THE PROJECTOR PRIOR TO DISASSEMBLY

**Read ALL instructions prior to disassembly.**

**Module Replacement Procedures must be performed by qualified service personnel only.**

**Non-insulated dangerous voltages may be exposed. Always disconnect from AC prior to disassembly.**

**Observe all electrostatic precautions. Use a grounded wrist strap when handling electronic assemblies.**

**Once you have turned off the projector, allow the cooling fans to automatically turn off before disconnecting from AC and opening the projector. This will take about 5 minutes.**

**Wear supplied gloves when indicated.**

### *Tools Required*

- key for security locks
- flat screwdriver
- long and short magnetic-tip Phillips #1 and #2 screwdrivers
- "stubby" Phillips #2 screwdriver
- assorted ball drivers (imperial)
- metric ball drivers (1mm, 2.5mm and 3mm)
- assorted nut drivers (imperial)
- electrostatic protective strap and pad
- disposable Nitrile gloves (included with optical components)

*NOTE: **1)** To locate each module within the projector, refer to the **Exploded Views** for Roadie 25K and/or CP2000. **2)** To re-install a module, follow the "removal" instructions in reverse unless otherwise noted. **3)** Refer to the **Interconnect Drawing** (page 30) when reconnecting harnesses.*

## REMOVING THE COVERS

***(1-5 minutes each)***

**⚠ WARNINGS ⚠**

**• Fully disconnect from AC before removing a cover, particularly those at the front of the projection head.**

**• Never operate the projector or run its fans without all covers installed.**

***Front Lid*** ➤ Remove the front lid for service procedures of the opto-electronic processing modules residing in the projection head.

1) Unlock the lid.
2) Raise the lid and pull its two tabs out from the opposite side from the latch. Set aside.

*Replace by inserting the 2 tabs into the hinge slots, and lowering the lid into place. Turn handle/latch to secure.*

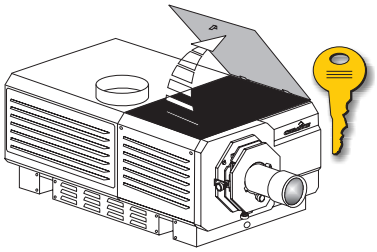


***Figure 1. Front Lid***

***Lamp Door (NON-OPERATOR'S SIDE)*** ➤ Unlock lamp door near top edge, and lower the door (see right). If desired, release the tether and spring mechanism located near the rear corner and remove the door entirely.

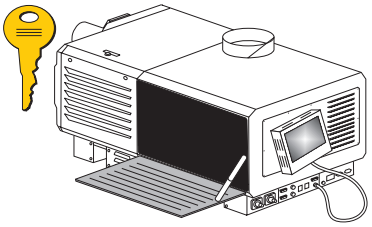


***Figure 2. Lamp Door***

***Filter Door*** ➤ See right. Remove 2 corner screws from top edge of filter door, and lift off door. To replace, insert bottom tabs into slots and secure with screws.

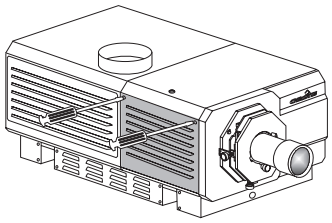


***Figure 3. Filter Door***

***Exhaust Grille*** ➤ See right. Remove 2 screws from top edge of exhaust grille, and lift off grille. To replace, insert bottom tabs into slots and secure with screws.

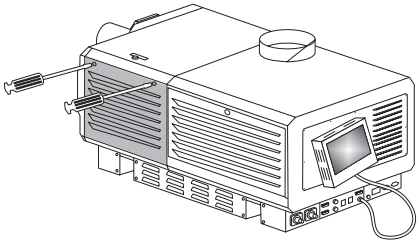


***Figure 4. Exhaust Grille***

### Igniter Door ➤

See right. Unlock igniter door near top edge, and lower the door. If desired, release the tether and spring mechanism located near the rear corner and remove the door entirely.

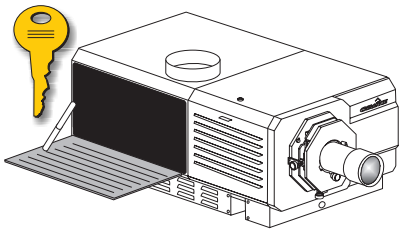


***Figure 5. Igniter Door***

### Rear Panel ➤

*NOTE: If the TPC is mounted to the projector, remove the TPC first by loosening its ball arm/clamp, and disconnecting the cable.*

Remove 12 Phillips screws securing the rear panel to the projection head frame. Remove panel and set aside.

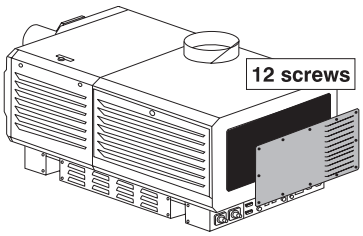



***Figure 6. Rear Panel***

### Rear Lid ➤

1) See Figure 7. below. Detach external ducting from the round duct opening at the top of the projection head.
2) Open/remove ***igniter door*** and ***lamp door***.
3) Disconnect harness (2 connectors: red in middle, black for vane switch) from the exhaust vane switch. Route the wiring down into the igniter compartment.
4) Remove 4 screws from the underside of the rear lid (both door channels).
5) Lift lid off and set aside.

*When re-installing, make sure to re-connect the vane switch harness.*

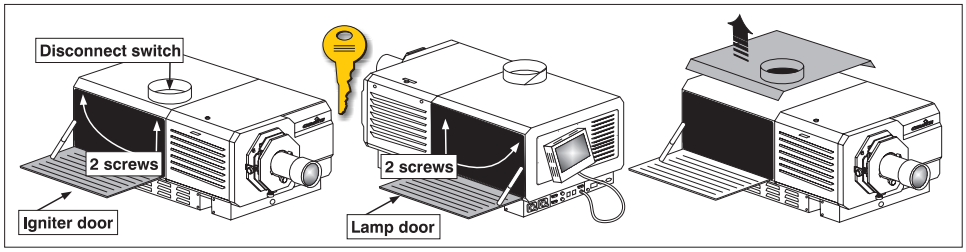



***Figure 7. Removing the rear lid***

### Belly Pan ➤

Remove the belly pan for access to the Ethernet hub, hub power supply and TPC power supply, or to route the liquid cooling hoses to the quick-release connectors in the light engine compartment.

1) Place a stable 4” support under the front and rear of the projector.
2) Remove 8 screws (4 each side) from the belly pan.
3) Slide the belly pan out from under the unit.

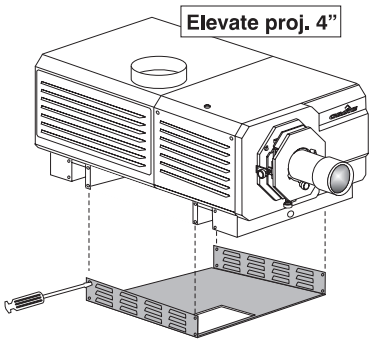



***Figure 8. Belly Pan***

## AC DISTRIBUTION MODULE (ACDM)

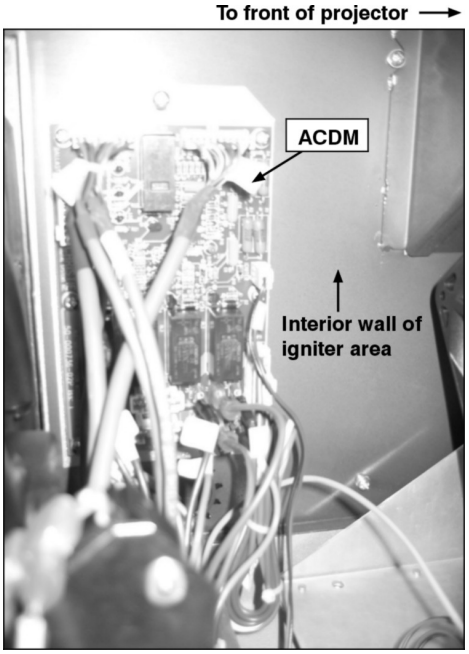
***(15 minutes)***

The AC Distribution Module is located in the igniter area between the lamp blower and the liquid cooling system. To remove:

1) Remove ***igniter door***.
2) Remove lamp blower ***vane switch bracket*** (one 3/8" nut).
3) Remove the ACDM mounting plate (3 screws), and lift the assembly from its slotted-hole mount on the interior wall. See right.
4) Disconnect 2 ACDM ground wires from the projector floor (1 screw).
5) Disconnect all connectors from the ACDM, and swap on to the new ACDM.

***When reconnecting***:

- Connect pairs of brown and blue wires with brown on top, and blue on bottom.




## AC RELAY MODULE

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## AC VOLTMETER

Refer to the *Roadie 25K Parts & Module Replacement Booklet*.

## COLD MIRROR

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## DOUSER (SHUTTER)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## ENHANCED FORMATTER INTERFACE BRD. (EFIB)

***(15 minutes)***

The three main processing boards are mounted vertically in the electronics card cage, where each connects to a motherboard on the floor of the card cage. The Enhanced Formatter Interface Board (EFIB) is closest to the light engine, with 3 pairs of flex cables attached. To replace:

1) Remove the projector ***front lid***. See ***Removing the Covers***.
2) Remove card cage lid (6 screws)—pull firmly.

3) Disconnect 6 flex cables (3 pairs) and 3 power cables from the EFIB. See right.

4) Disconnect the other end of the 6 flex cables from the light engine (see ***light engine*** instructions). Discard, as the flex cables should not be re-used.

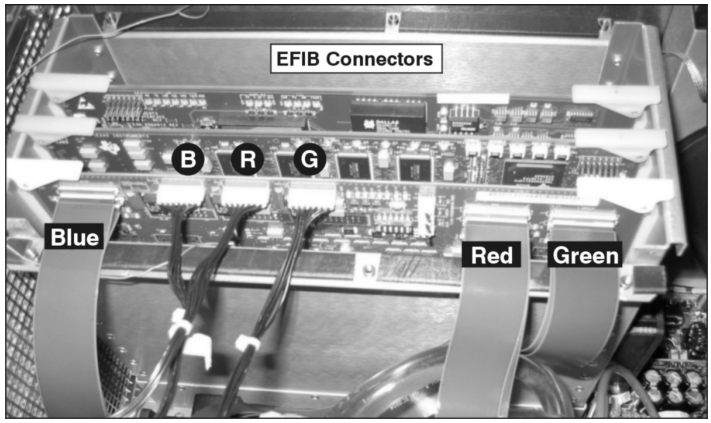



***Figure 9. EFIB Connectors***

5) Release 2 side ejectors to unseat the EFIB from the motherboard.

6) Pull straight up from card cage.

7) ***When re-installing***, orient the EFIB so that its components face the front of the projector. Double-check dip switch settings as indicated in the separate instructions supplied in the kit. Re-connect using new flex cables—make sure to follow the red-green-blue labeling (Figure 9.), and route properly to the corresponding light engine location. See also ***flex cables***.

**⚠ WARNING ⚠**
**Flex cables and their connectors are fragile.**
**Use care when handling.**

*NOTE: After installation of a new EFIB, run the DLP Cinema™ Firmware Installation Program to ensure all boards—Interface, Processor, EFIB and modular formatters—are running the same version of software.*

## ETHERNET HUB

### *(10 minutes)*

*NOTE: Replacement hubs are not available from Christie.*

The Ethernet hub is Velcro™-mounted on the underside of the projector, protected by the belly pan (see Figure 10). To move or replace:

1) Remove the belly pan. See ***Removing the Covers***.

2) At the Ethernet hub, disconnect all devices.

3) Release the Velcro™ strap securing the hub to the interface plate, and replace with desired hub.

## ETHERNET HUB POWER SUPPLY

***(10 minutes)***

The Ethernet hub power supply is Velcro™-mounted on the underside of the projector (see Figure 10.), protected by the belly pan. To move or replace:

1) Remove the belly pan. See ***Removing the Covers***.
2) Disconnect the Ethernet hub power supply.
3) Release the Velcro™ strap securing the power supply to the interface plate, and replace with new power supply.

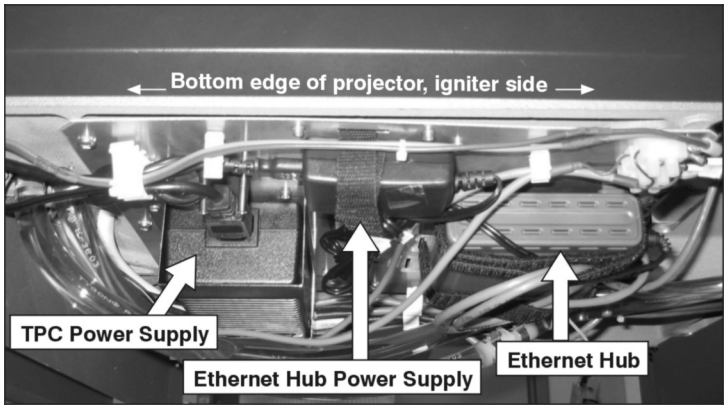



***Figure 10. Belly Pan Area for TPC Power and Ethernet***

## FAN (CARD CAGE)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## FAN (HEAT EXCHANGER)

***(20 minutes)***

The heat exchanger's fan is secured to the heat exchanger and mounted with the pump in the igniter area. To replace this fan, remove the pump/heat exchanger assembly as described in the ***Pump*** instructions later in this booklet. With the assembly pulled out of the igniter area (see Figure 29.), you can access the fan screws and swap a new fan in place.

***When re-installing,*** make sure connections and lead dress are correct. Swap the finger guard on to the new fan.

## FAN (LAMP BLOWER)

***(45 minutes)***

The lamp fan is mounted in the rear corner of the igniter compartment. To remove:

1) Remove ***igniter door, lamp door, rear panel,*** and ***rear lid***. See ***Removing the Covers***.

2) Remove Lamp Blower Vane Switch/mounting bracket assembly (3/8" nut).
3) Disconnect the blower from the ACDM.
4) Remove 2 screws (5/32") securing the fan in place. See Figure 11.
5) Rotate the blower and lift out at the top of the projection head.

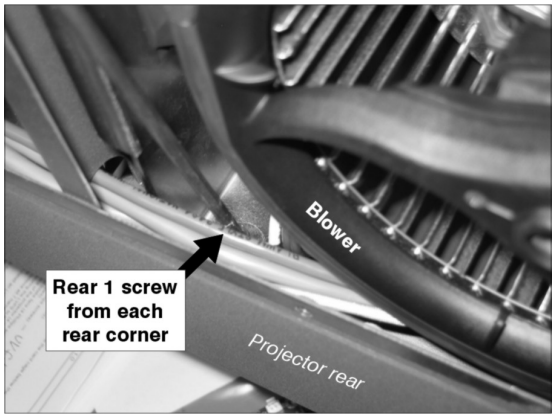



***Figure 11. Remove Blower Mounting Screws***

***When re-installing**, make sure the "nozzle" of the blower is 1) well-centered with the opening to the lamp compartment, and 2) flush with the interior firewall—not leaning toward or on this wall. Install the blower as follows:*

1) Swap the blower-to-ACDM harness on to the new blower.
2) Begin with lamp side facing up, bottom facing the lamp compartment.
3) Lower into the projector and rotate into place. Position as far to the rear of the projector as possible—provide 1/8" clearance at the vane switch.

   If the unit has been upgraded with silicone stabilizing hardware shown in Figure 12., please note the following:

   - In older bases, invert the rearmost silicone mount (1) as shown—the smaller diameter end faces down.
   - Make sure the lamp blower seats properly on all three anti-vibration silicone mounts (Figure 12.).
   - Add rubber washers as necessary for proper leveling and positioning of the blower. See "*When re-installing*" note, above.

   *NOTE: Original units may also require one rubber washer added at (1) and (2).*

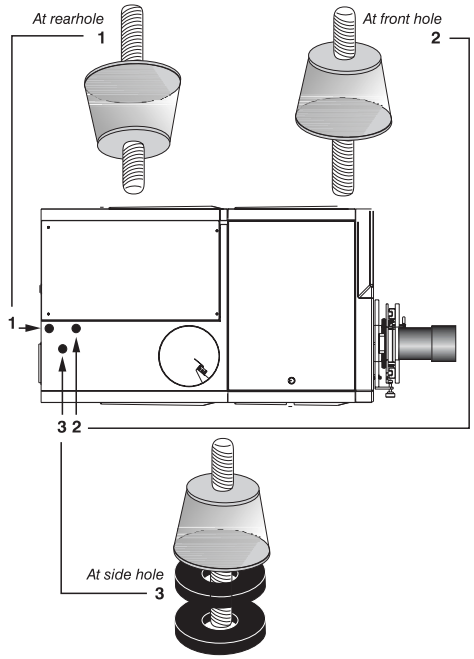



***Figure 12. Silicone Stabilizers at Mounts (optional)***

## FANS (SIDE INTAKES)

### *(20 minutes each)*

Two identical "intake" fans are mounted side-by-side on the lamp side of the projection head. Although the filtered air actually enters on the opposite side of the projector—the igniter side—these fans pull the air across the front area of the projection head and are considered *intake* fans. Either fan can be replaced independently after removing the louvered exhaust grille/shield from the projector.

1) Remove projector ***front lid*** and ***exhaust grille***. See ***Removing the Covers***.
2) Make sure each fan harness is labeled before disconnecting from the SSM (P2 and P3). See Figure 13.

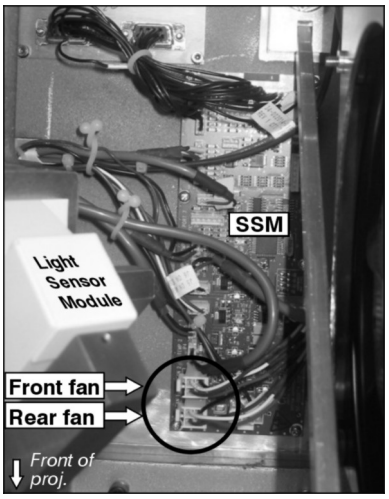



***Figure 13. Side Intake Fans***

3) From outside, remove four corner 7/64" hex mounting screws from the desired fan, and remove the fan from the projector. See Figure 15. below.

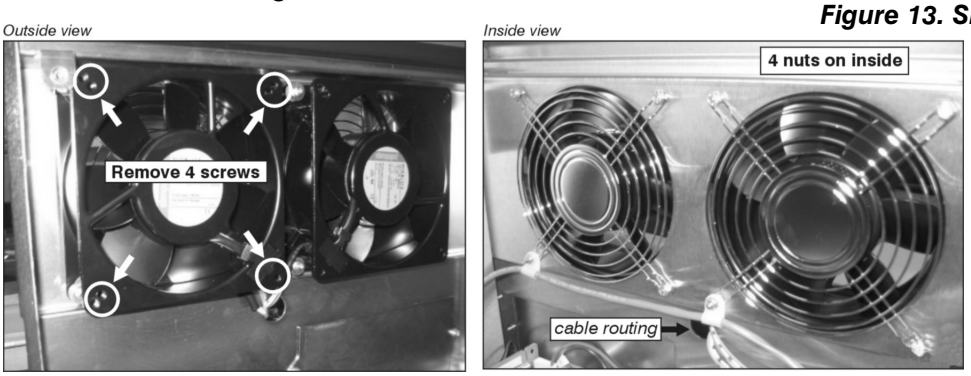



***Figure 14. Side Intake Fans***

4) When installing a new fan, finger-tighten only—do not over-tighten or compress the rubber isolators.

## FLEX CABLES

Gloves Required

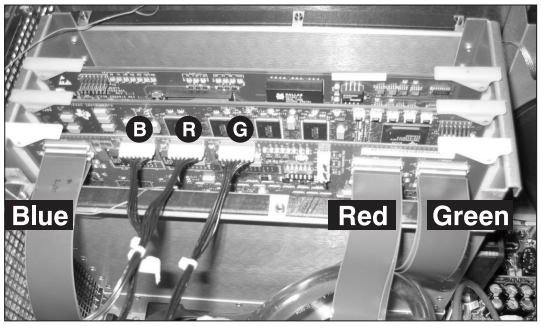
### *(10 minutes)*

The 3 pairs of identical flex cables routed between the Enhanced Formatter Interface Board (EFIB) and the light engine should be replaced whenever either of these modules is replaced. The cables are available separately as well as with the EFIB and light engine.

For each pair of flex cables, connect the ***top*** cable from the EFIB to the ***top*** connector on the corresponding modular formatter in the light engine.

Bottom cables connect to the corresponding bottom connector.

E-FIB Connectors




Flex Cable Routing at Light Engine

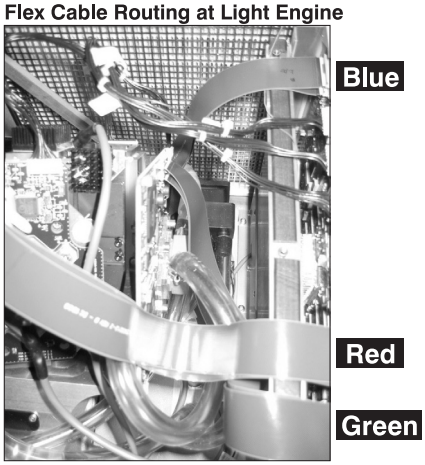



***Figure 15. Flex Cable Connections***

## FOLD MIRROR

Refer to the *Roadie 25K Parts & Module Replacement Booklet*.

## IGNITER

Refer to the *Roadie 25K Parts & Module Replacement Booklet*.

## ILLUMINATION OPTICS SYSTEM (IOS)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet* with one change: you must remove the front belly pan (four 5/32” hex screws) to access the mounting screws under the overhanging portion of the projector.

## INTEGRATOR MODULE

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## INTERFACE BOARD

***(10 minutes)***

The three main processing boards are mounted vertically in the electronics card cage, where each connects to a motherboard on the floor of the card cage. The Interface Board is the board furthest from the light engine. To replace:

**⚠ IMPORTANT ⚠**

**Back up configuration data files (source, screen, MCGD and TCGD) before removing the Interface Bd.**

1) Remove the projector ***front lid***. See ***Removing the Covers***.
2) Remove card cage lid (6 screws). This may be a snug fit—pull up firmly.

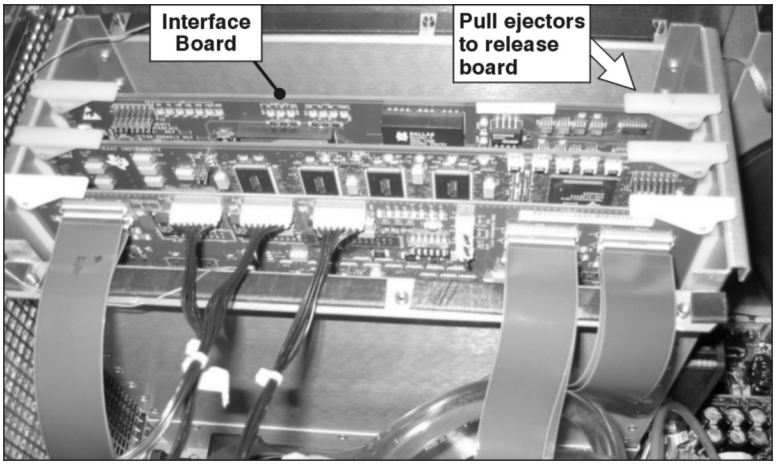



***Figure 16. Interface Board in CP2000-X Card Cage***

3) Release 2 side ejectors to unseat the Interface from the motherboard.
4) Pull straight up from card cage.

***When installing:*** Orient board with components facing the front of the projector.

*NOTES: 1) After installation of a new Interface Board, run the DLP Cinema™ Firmware Installation Program to ensure all boards—Interface, Processor, EFIB and modular formatters—are running the same version of software. 2) Restore your back-up data to the new Interface board. 3) IP settings are stored on the Interface board. You may have to connect via RS232 and use DCP Librarian to set the projector's IP address properly.*

## INTERLOCK SWITCH (LAMP DOOR)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*. Make sure to secure cabling away from the interlock arm to prevent the arm from pinching and damaging cables in a guillotine-like action when the lamp door is closed.

**⚠ IMPORTANT ⚠**

**Dress and secure all interlock cables away from the lamp door interlock arm.**

## LAMINAR AIRFLOW DEVICE (LAD)

***(20 minutes)***

The Laminar Airflow Device (LAD) consists of a small fan and filter mounted in a plastic frame and secured to the floor of the projection head, adjacent to the corner brace on the operator's side. To remove the LAD for fan replacement:

*NOTE: To replace the filter only, open the projector lid and skip to* ***Step 8****.*

1) Remove the projector ***front lid***. See ***Removing the Covers***.
2) Disconnect the LAD fan from the SSM P7.
3) Remove the 3 air hoses from the LAD.
4) Remove 2 Phillips screws securing the LAD to the projection head floor or, in newer units, to a mounting bracket that slightly changes the orientation of the assembly.
5) Tilt the LAD and carefully lift out of the projector between the integrator and the intake fans.
6) Remove the fan from the plastic frame (four 3/32" hex screws) and swap in a new fan.
7) Re-connect the air hoses as shown.

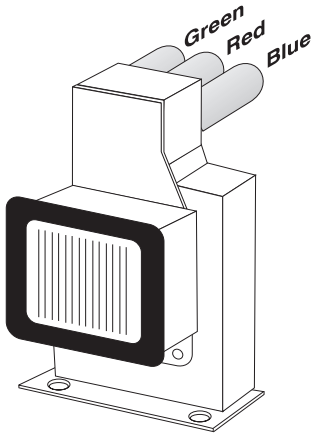



***Figure 17. Hoses***

8) ***<u>To replace the filter only,</u>*** slide the filter out towards the intake fans and replace with a new filter. Do not push on the filter material.

   *NOTE: Visually check the LAD filter whenever the side air filter is replaced. Change when the LAD filter appears grey/brown—this material cannot be cleaned.*

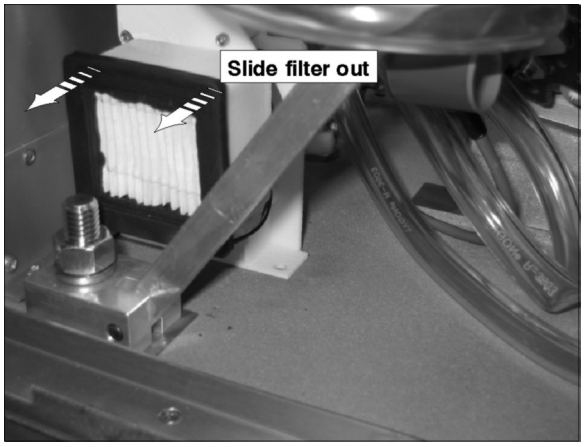



***Figure 18. Replacing the LAD filter only***

After re-installing the LAD filter, run the projector briefly

*without* the air hoses connected to the LAD. This will prevent any old filter dirt or new shavings that have rubbed off the filter lining from being deposited directly on the DMDs. Then reconnect LAD hoses as shown.

## LAMP BALLAST

Refer to the *Roadie 25K Ballast Service Instructions* supplied with the ballast.

## LampLOC™ MODULE

***(45 minutes)***

The system of sensors and motors for controlling lamp position is a single module mounted near the rear wall of the projection head, under the lamp/reflector cooling duct. To replace the LampLOC module:

1) Remove the ***TPC*** if present on projector. See ***TPC***.
2) Remove the projection head ***rear panel, rear lid*** and ***lamp door***. See ***Removing the Covers***.
3) Remove the ***lamp*** (see the *User's Manual* provided with the projector).
4) Manually move the vertical (Y) adjustment as low as possible by turning the "Y" thumbwheel counterclockwise. This wheel is just above and parallel to the LampLOC mounting plate. See Figure 19.

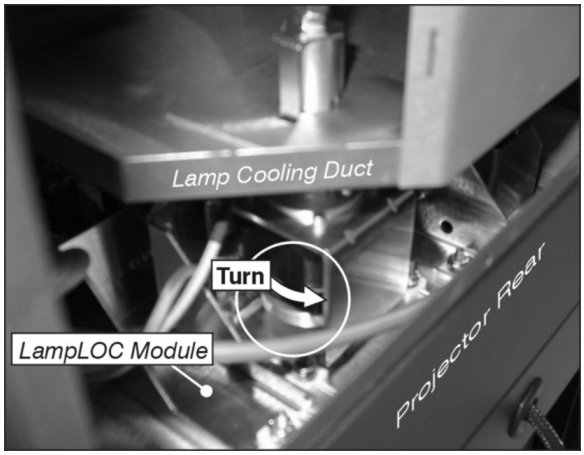



***Figure 19. Adjust "Y" to lower position***

5) **REMOVE THE LAMP COOLING COMPARTMENT/DUCT:**
   - ❑ Remove the cathode swivel nut by disconnecting 3 cathode wires and removing the rear hardware. Route wires outside of duct (down through the hole). See **Error! Reference source not found.**.

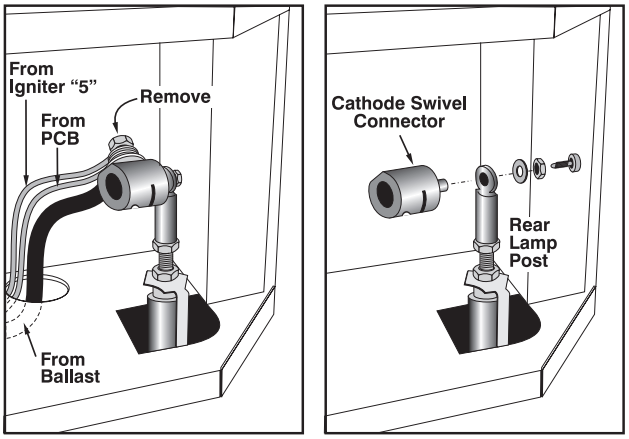



***Figure 20. Remove Cathode Connector Nut***
***(NOTE: There is no PCB Wire in CP2000-X)***

- Remove the sensor flag (see right).
- Remove the small floor insert surrounding the cathode post (see Figure 21).

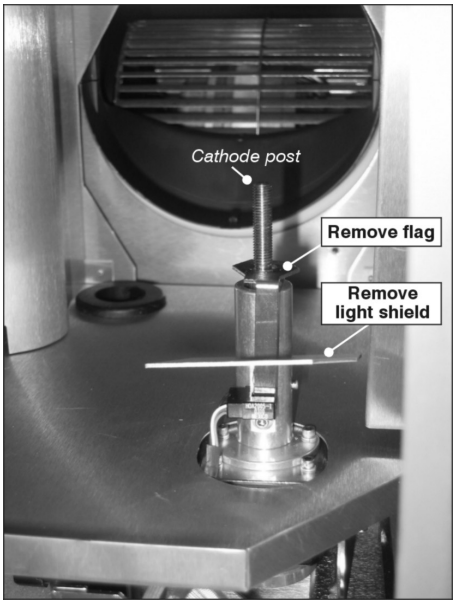



***Figure 21. Flag and Shield***

- Remove 2 screws (7/64") securing the top and bottom of the lamp cooling compartment to the projection head firewall. See Figure 22.

***Figure 22. Lamp Cooling Compartment Screws***

**6)** Remove 4 screws (3/16") securing the LampLOC module—including its mounting plate—to the projection head floor. See Figure 23.

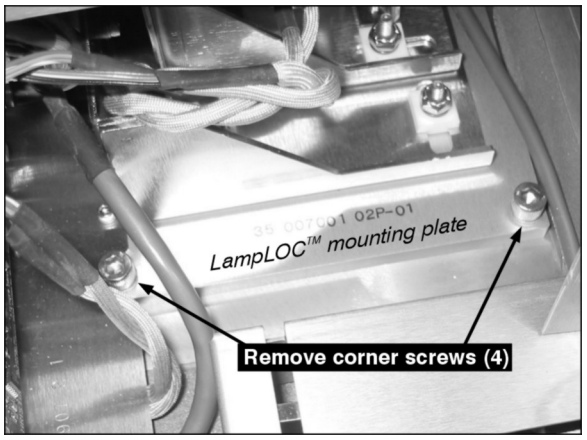



***Figure 23. Remove LampLOC ™ Mounting Screws***

7) Tilt the LampLOC/duct assembly towards the rear of the projector. At this point, the duct can be pulled off the LampLOC module and out of the projector (Figure 24). It is a tight fit—pull blower away for better clearance.

8) Remove the LampLOC module from the projector, and swap in a new module.

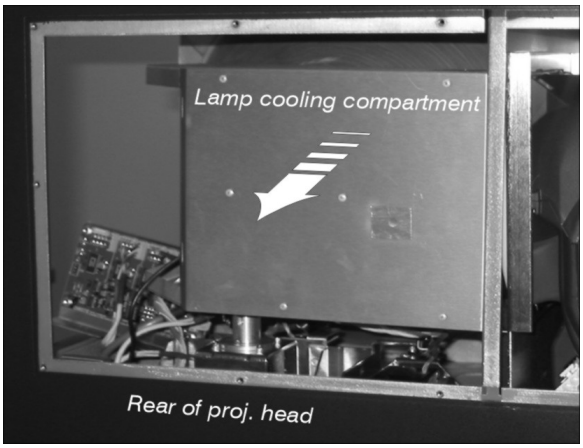



***Figure 24. Tilt and Remove the Lamp Cooling Compartment/LampLOC Assembly***

***After installation,*** double-check SDB connections, then reset LampLOC.

## LENS MOUNT

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## LIGHT ENGINE

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## LIGHT SENSOR MODULE

***(10 minutes)***

The Light Sensor Module (LSM) is located in the front corner of the projection head, just above the SSM. To replace:

1) Remove the projector ***front lid***. See ***Removing the Covers***.

2) Remove 2 screws (5/32") securing the LSM to the projector. See Figure 25.
3) Disconnect the LSM harness, and remove the sensor from projector.

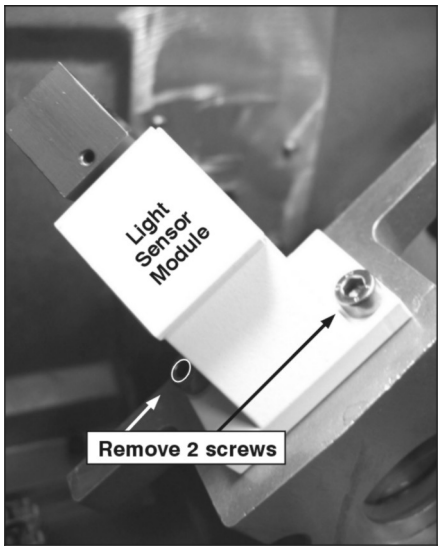



***Figure 25. Light Sensor Module***

***Checking Light Sensor Module Readings:***

After installation, make sure to reset LampLOC and, if desired, recalibrate the min/max footlamberts.

Also check light output readings during adjustment of LampLOC. Ideally, these values should change proportionately and "without stopping" as the lamp moves, and produce a good curve across the range of adjustment. If in doubt, after LampLOC is done, adjust power level from minimum to maximum and make sure light reading increases in proportion to power level.

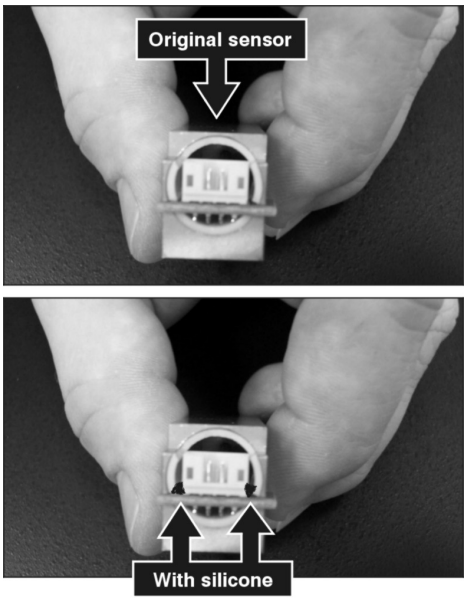



***Figure 26. Apply Silicone if needed (rare)***

In rare cases, if you find that the sensor receives too much light and over-saturates, and is unable to produce the proportional light output readings expected during use of LampLOC, add a small amount of silicone (see right) to block some of the light. Use enough to produce a valid curve of readings, and apply only on the *side* areas as shown.

*NOTE: Silicone is rarely needed for any CP model, including CP2000-X.*

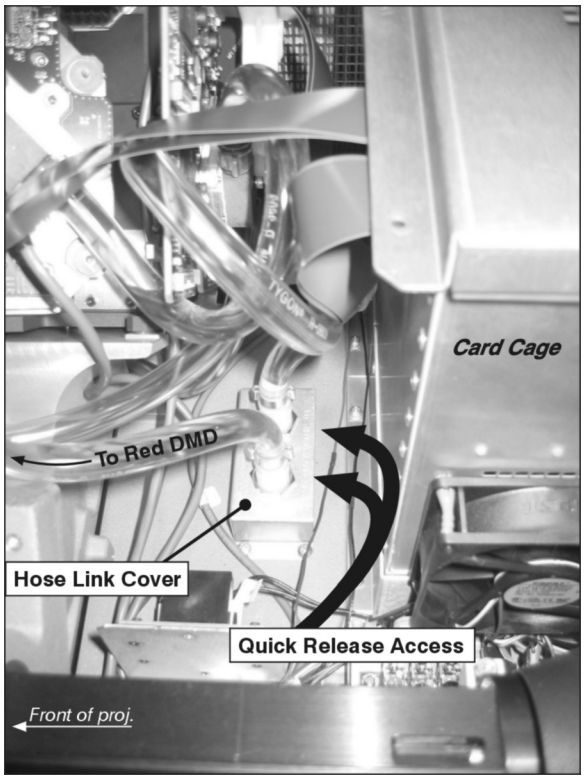
## LIQUID COOLING SYSTEM

***(40 minutes)***

*NOTE: See also* ***Pump*** *and* ***Fan, Heat Exchanger****.*

The liquid cooling system consists of a pump, coolant reservoir, and heat exchanger/fan linked together with clear hoses and mounted between the lamp blower and the igniter. To access and replace this system:

1) Remove the ***projector lid***, ***igniter door, rear lid*** and ***belly pan***. See ***Removing the Covers***.
2) Disconnect the pump motor and heat exchanger/fan from the ACDM.
3) Reaching into the light engine area, depress both of the quick-release connectors linking the 2 hoses from the light engine to the cooling components in the igniter area:
   - Stand on the lamp side of the projector.
   - Insert hand between the card cage and the hose link cover (see right).
   - Depress the connectors to release hoses, pushing toward the front of the projector. Carefully pull hoses free at the underside of the projector.




4) In the igniter area, remove the reservoir cradle (2 nuts)—the reservoir will still be attached via hose to the pump. See right.

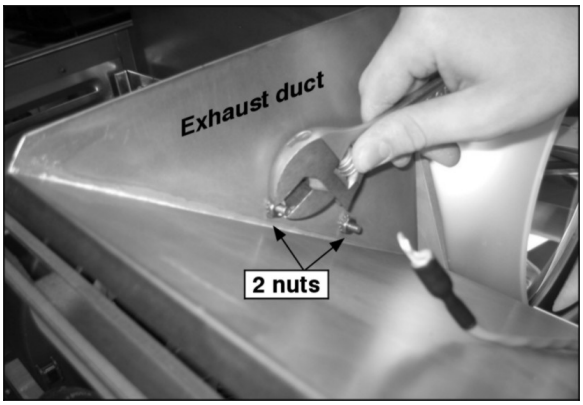



***Figure 28. Remove Reservoir Cradle***

5) Remove four 5/32" hex screws securing the pump mounting bracket to the base the projector. The interior screw nearest the heat exchanger is very difficult to reach.

6) To remove the pump assembly, tilt it toward the *front* and *middle* of the projector—this may take several tries, but the entire heat exchanger/pump assembly can be removed via the igniter door opening.

***Figure 29. Cooling Components Out***

***Re-installation:***

**PROPER ROUTING TO LIGHT ENGINE:** At the underside of the projector, make sure to re-connect the hoses correctly:

- Heat exchanger to ***red*** (*CP2000-X* lamp side)
- Reservoir to ***blue*** (*CP2000-X* air filter side*)*

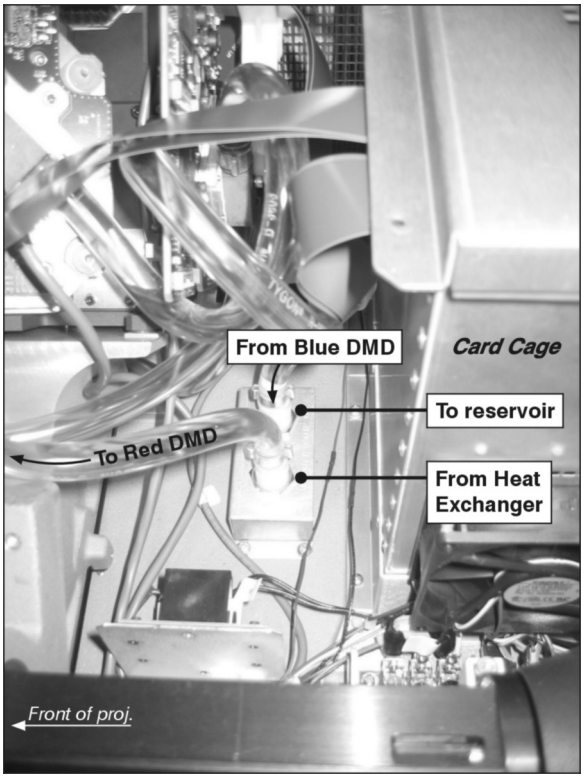



***Figure 30. Proper Hose Reconnection***

**FILLING:** The system is subject to air locks upon filling, particularly if hose lines are significantly curved. For best results, fill *before* securing the new cooling system in the projector—spread lines out as flat and straight as possible before adding liquid coolant. Eliminate any air locks—liquid must be continuous, with no gaps or bubbles.

**IF A SINGLE COOLING COMPONENT WAS REPLACED:** To fill a system already installed within the projector (for example, when you have replaced only the pump):

1. Remove the belly pan so that the hosing under the projector is visible.
2. Fill the reservoir ¾ full.
3. Power up the projector.
4. Close the douser/shutter.
5. Watch closely for airlocks in the lines, particularly to and from the pump—you may have to pinch the hoses repeatedly to eliminate airlocks and encourage flow.
6. Run as necessary to eliminate all air bubbles. Make sure the pump is not running "dry".
7. Power down and top up the reservoir—it should be ½-¾ full when done.
8. Power up and double-check for airlocks.

**ROUTE THE RESERVOIR-TO-PUMP HOSE:** Make sure to route the reservoir-to-pump hose 1) around the vane switch and 2) under the blower (see Figure 31). A longer length of hose is included for upgrading older units in which the original shorter routing is prone to kinking.

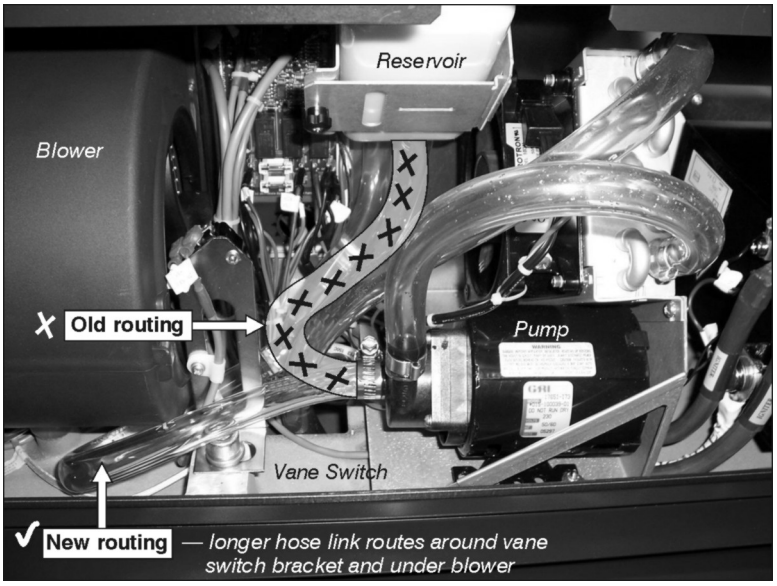



***Figure 31. New Reservoir-to-Pump Hose Routing***

**⚠ IMPORTANT: RECOMMENDED COOLANT ⚠**
**Use low silica *Prestone 50% Premix Anti-Freeze*.**
**Other solutions may cause clogging or other serious malfunctions.**

**OTHER:** If *Prestone 50% Premix Anti-Freeze* (a 50/50 mix of de-ionized water and low silica ethylene glycol) is not available, mix your own 50/50 solution of distilled water and a low-silica ethylene glycol (anti-freeze). Low silica solutions are less abrasive to the flexible tubing used in the projector. Avoid biodegradable types.

## LOW VOLTAGE POWER SUPPLY (LVPS)

***(30 minutes)***

The Low Voltage Power Supply (LVPS) is mounted to the floor of the projection head, adjacent to the electronics card cage and under the integrator. To replace the LVPS:

1) Remove the projector ***front lid*** and ***exhaust grille***. See ***Removing the Covers***.
2) With the exhaust grille out, remove the LVPS access panel.
3) Remove the single screw (7/64") securing the black "snood" to the douser mounting plate. The integrator can remain in place.

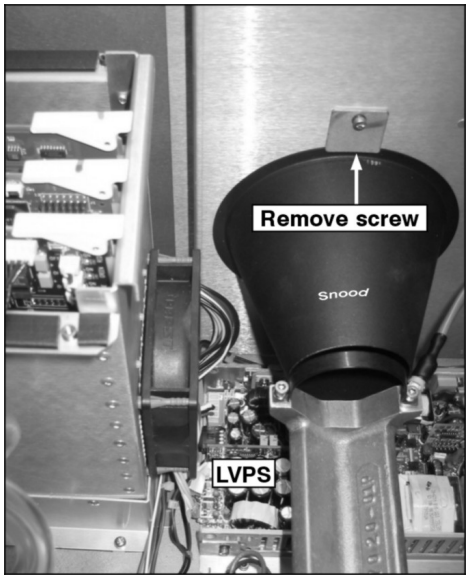



***Figure 32. Remove snood above LVPS***
***(NOTE: SHOWN WITHOUT INTEGRATOR)***

4) Remove 4 hex screws (7/64") securing the LVPS to the projection head floor. See right.
5) With LVPS angled up for access, unplug all its connectors (see Figure 33). Note that 3 of the harnesses are secured with Phillips screws.
6) Pull out from the side of the projector, through the access hole.

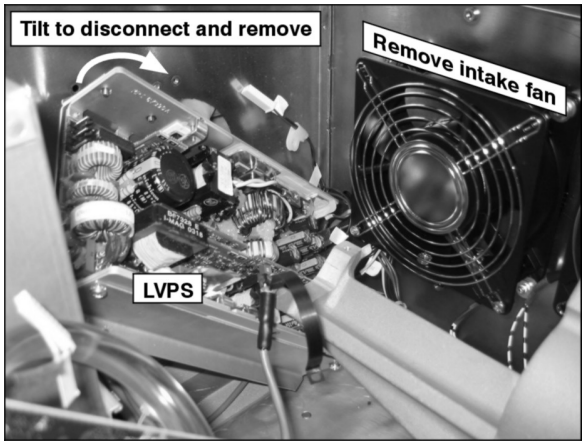
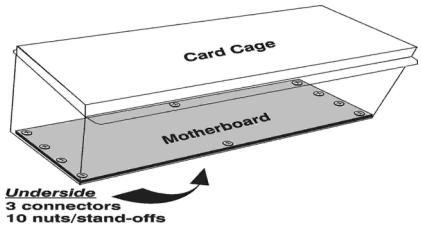



***Figure 33. Removing the LVPS***

## MOTHERBOARD

### *(25 minutes)*

The motherboard is located on the floor of the card cage—the Processor Board, Interface Board and EFIB all plug into it. To replace this PCB:




1) Remove the projector ***front lid*** and ***belly pan***. See ***Removing the Covers***.
2) Remove card cage lid (6 screws). This is a snug fit—pull up firmly.
3) Remove the Processor Board, Interface Board and EFIB from the card cage.
4) From the underside, disconnect 10 nuts with stand-offs, and remove 3 connectors.
5) Remove the Motherboard mounting screws (10-12 Phillips screw) and lift the board out.

## PROCESSOR BOARD

### *(10 minutes)*

The three main processing boards are mounted vertically in the electronics card cage, where each connects to a motherboard on the floor of the card cage. The Processor Board is the middle board. To replace:

1) Remove the projector ***front lid***. See ***Removing the Covers***.
2) . Remove card cage lid (6 screws)—pull firmly.

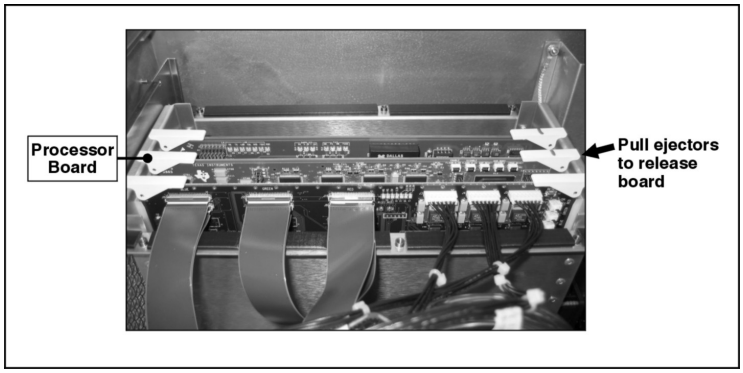



***Figure 34. Processor Board in Card Cage***

3) Release side ejector hooks to unseat the Processor from the motherboard.
4) Pull straight up from card cage.

**When installing**, orient board with components facing the front of the projector.

*NOTE: After installation of a new Processor Board, run the DLP Cinema™ Firmware Installation Program to ensure all boards—Interface, Processor, EFIB and modular formatters—are running the same version of software.*

## PUMP

***(30 minutes)***

The pump is part of the liquid cooling system. To replace the pump only:

1) Remove the projector ***rear lid, belly pan*** and ***igniter door.*** See ***Removing the Covers***.
2) Fully drain all coolant from the system (refer to separate instructions).
3) Disconnect pump from the ACDM, and remove both hoses from the pump.

   *NOTE: Later units have gear clamps that can be loosened and reused. In earlier projectors having permanent hose connections, you must cut or pry off the old hosing and discard the clamps. Each service kit includes gear clamps for upgrading units in which the old style clamps were used.*

***Figure 35. Removing the Pump Assembly***
***(SHOWN WITH HOSES STILL IN PLACE)***

4) Remove the 4 screws securing the isolation bracket (for pump and heat exchanger) to the projector floor. The interior screw nearest the heat exchanger is very difficult to reach but it can be done.
5) Slightly rotate the pump/bracket assembly to the front (clockwise), and remove it from the projector—see right. Rest the assembly on the open igniter door—the liquid cooling hoses should provide enough clearance without having to be disconnected.
6) Remove the pump isolation bracket from the pump (4 screws) and heat exchanger (3 screws).
7) Swap the new pump on to the bracket.

**⚠ IMPORTANT ⚠**
**Secure hardware as shown.**

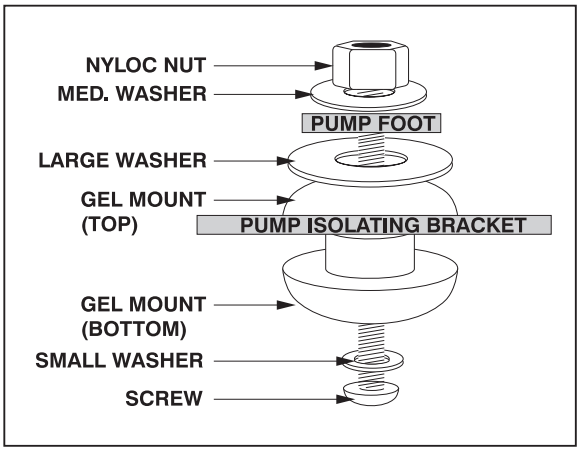



***Figure 36. Hardware at Pump***

8) Secure the heat exchanger to the bracket.
9) Re-install the completed assembly in the projector.
10) Re-connect pump hoses using gear clamps provided.
11) To refill the system, refer to the separate instructions provided with the pump.

## REFLECTOR(S)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*, noting the following differences:

- To access the top mounting screw at the firewall, move the liquid cooling reservoir aside first.
- To lift out the cast reflector mount (with reflectors still attached), tilt the assembly towards the front and rotate the innermost side up. Remove anode yoke to avoid possible damage to the reflectors.

## STEPPER DRIVER BOARD (SDB)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## SYSTEM SUPERVISOR MODULE (SSM)

***(15 minutes)***

The SSM is mounted to the floor of the projector between the LVPS and the front of the projector. To replace:

1) Remove the projector ***front lid***. See ***Removing the Covers***.

2) If not already done, carefully label all fan and temperature harnesses so they can be re-connected correctly upon re-install (see right). Then disconnect all harnesses from the SSM.

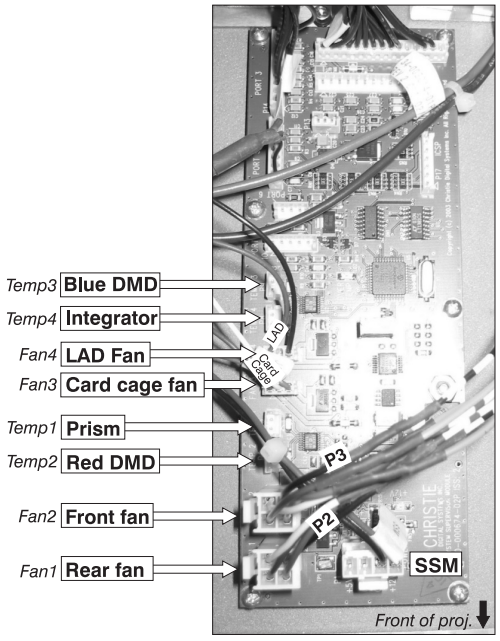



***Figure 37. Label SSM Harnessing***

3) Remove 6 Phillips screws securing the SSM to the projector floor. See right.

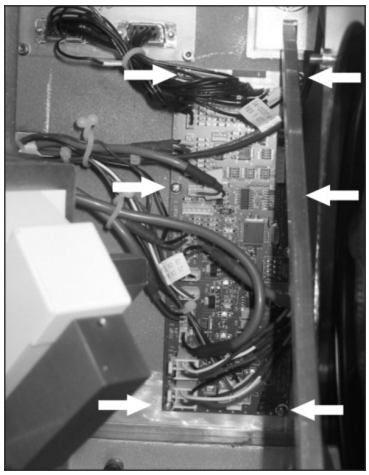


*Figure 38.SSM Mounting Screws*

***When re-installing the SSM***, make sure to:

- Connect the green GND wire to a mounting screw on the SSM.
- Connect all harnessing correctly.

## TEMPERATURE SENSORS

Refer to the *Thermal Sensor Installation Instructions* supplied with the thermal sensor service kit.

## TOUCH PANEL CONTROLLER (TPC)

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

## 24V POWER SUPPLY FOR TPC

***(10 minutes)***

*NOTE: Not available separately—included with Touch Panel Controller.*

The 24V power supply is mounted to the underside of the projector, protected by the belly pan (refer back to Figure 10.). To move or replace:

1) Remove the ***belly pan***. See ***Removing the Covers***.
2) Disconnect the 24V power supply.
3) Release the power supply from its bracket secured to the interface plate, and replace with new power supply.

## UV FILTER

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*, noting the addition of washers used as spacers for each clip.

## VANE SWITCH: EXHAUST

***(10 minutes)***

The vane switch for the exhaust duct is located just inside the projector's top duct. To replace:

1) Disconnect the user's exhaust ducting from the top duct of the projector (up to 4 screws).

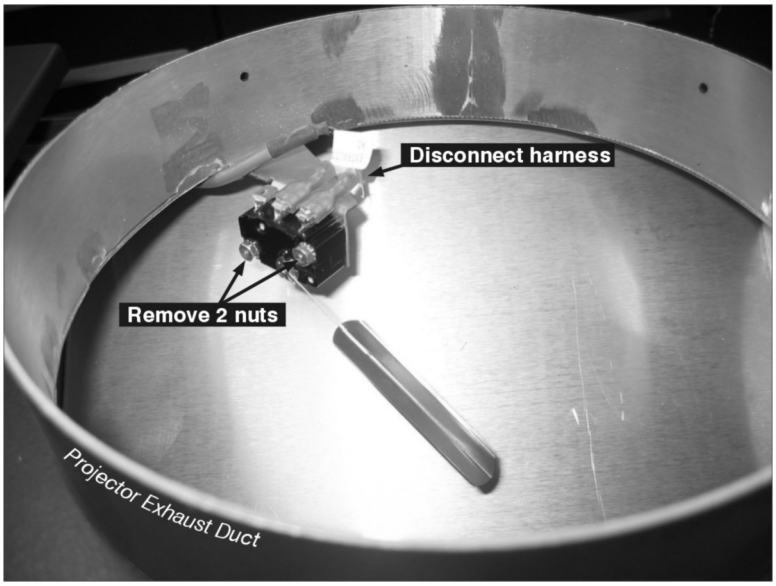



***Figure 39. Vane Switch in Exhaust Duct***

**2)** Remove 2 nuts (¼") securing the vane switch to its mounting bracket.

**3)** Disconnect the harness from the switch, and remove the switch.

**⚠ NOTE ⚠**

**The Interlock Kit contains both vane switches: lamp fan and exhaust duct. Use the *longer* one in the exhaust duct.**

***Installing the new vane switch:***

For best results, a small drop of silicone should be added at the slot for the vane "feather" to keep it from falling out during use.

## VANE SWITCH: LAMP FAN

### *(10 minutes)*

The lamp fan vane switch (a.k.a., airflow sensor) is located in the igniter area, secured to a vertical bracket just in front of the lamp fan/blower. To replace:

**1)** Remove the ***igniter panel***. See ***Removing the Covers***.

2) Remove the 2 hex screws (3/32") securing the lamp vane switch to its mounting bracket.
3) Disconnect the harness from the switch, and remove the switch.
4) Swap the new switch on to the bracket, and re-install.

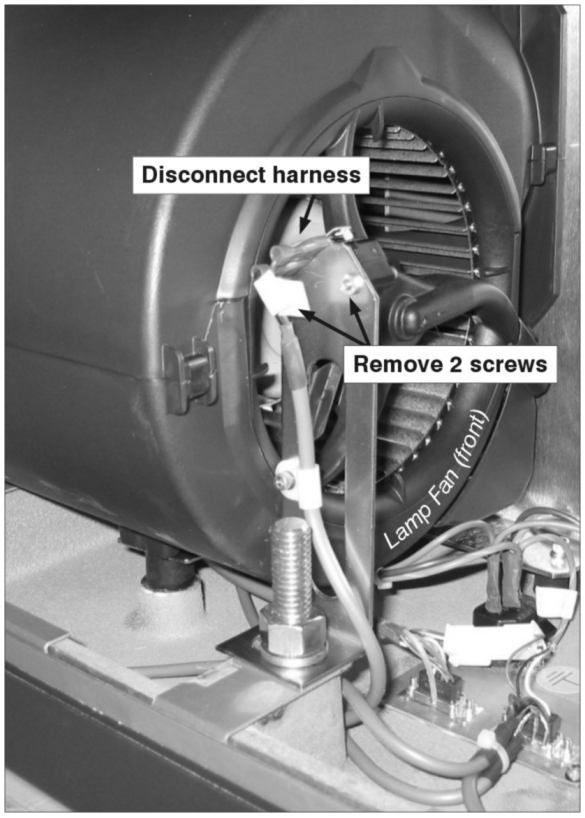



***Figure 40. Remove Vane Switch for Lamp Fan***

**⚠ NOTE ⚠**

**The Interlock Kit contains both vane switches: lamp fan and exhaust duct. Use the *smaller* one at the lamp fan.**

***Installing the new vane switch:***

Make sure the vane (paddle) is directed down as shown in Figure 41, otherwise airflow will not be sensed properly during operation.

For best results, it is recommended that a small drop of silicone be added at the slot for the vane "feather" to keep it from falling out during use.

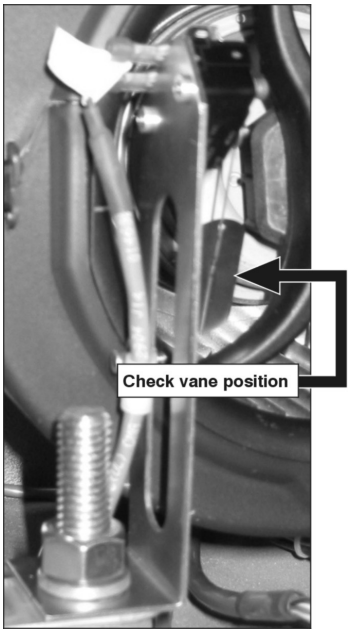



***Figure 41. Vane Position***

## YELLOW NOTCH FILTER

Refer to the *CP2000/XP2000 Parts & Module Replacement Booklet*.

*NOTES: All design and part numbers subject-to-change*

## PROJECTION HEAD